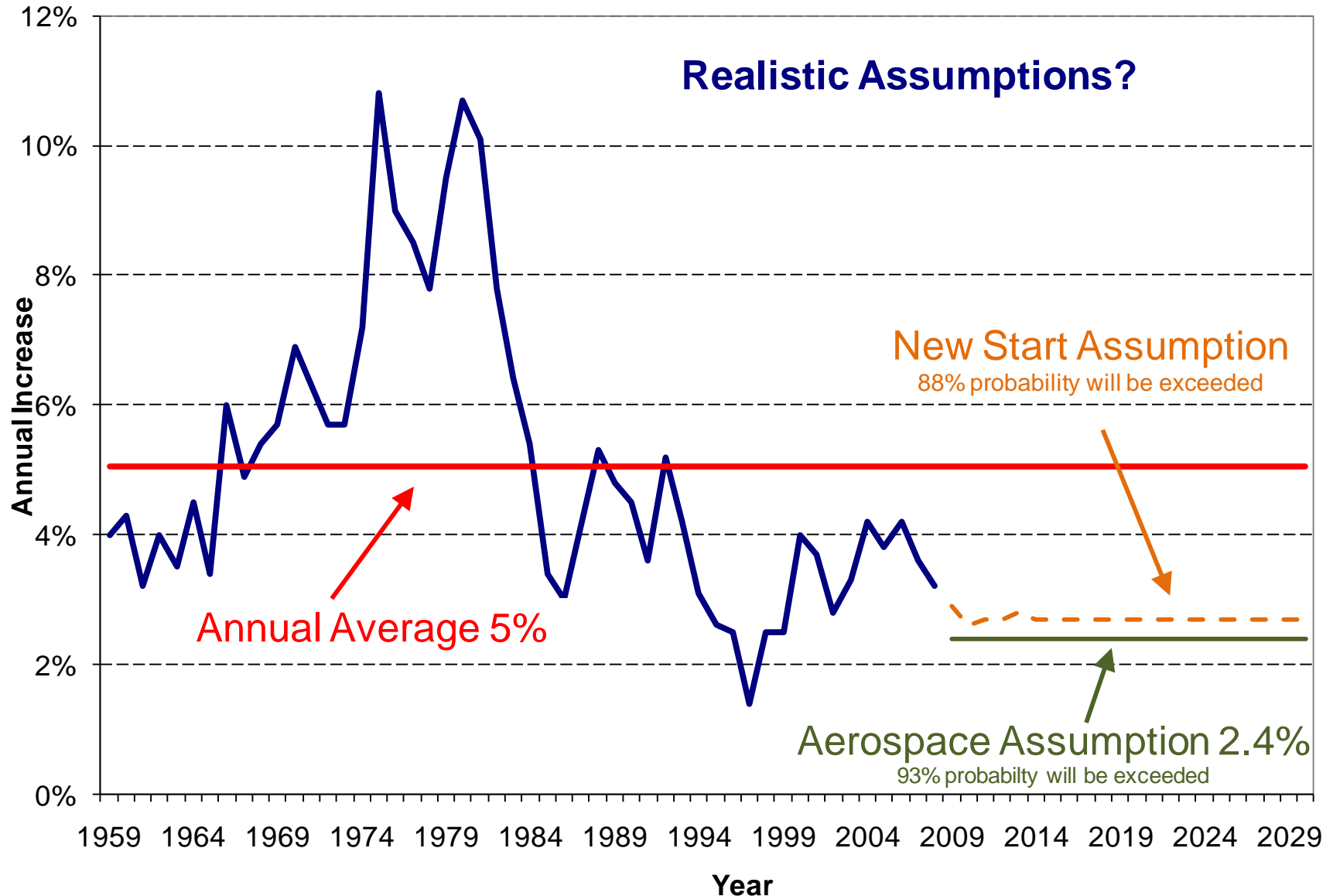


# Escalation

Glenn Butts

# Aerospace Escalation



# Significant EELV Program Cost Increases Reported

- Costs reported as of Dec. 2003 increased by about \$13.3 billion over the approved baseline estimate of \$18.8 billion due to
  - Assured access to space mission and safety initiatives costing \$538.8 million through fiscal year 2009.
  - Mission assurance initiatives for fiscal years 2010 through 2020 costing \$527 million.
  - Reallocation of seven launches due to sanctions and Air Force support of second West Coast launch pad totaling \$227 million.
  - Satellite weight growth costing \$1.335 billion.
  - Incorrect inflation assumptions of \$2.821 billion.
  - Price increases on second and subsequent launch services awards costing \$7.807 billion due to the lack of the commercial market.

REPORT TO CONGRESS

MILITARY CONSTRUCTION PRICING  
INEQUITIES



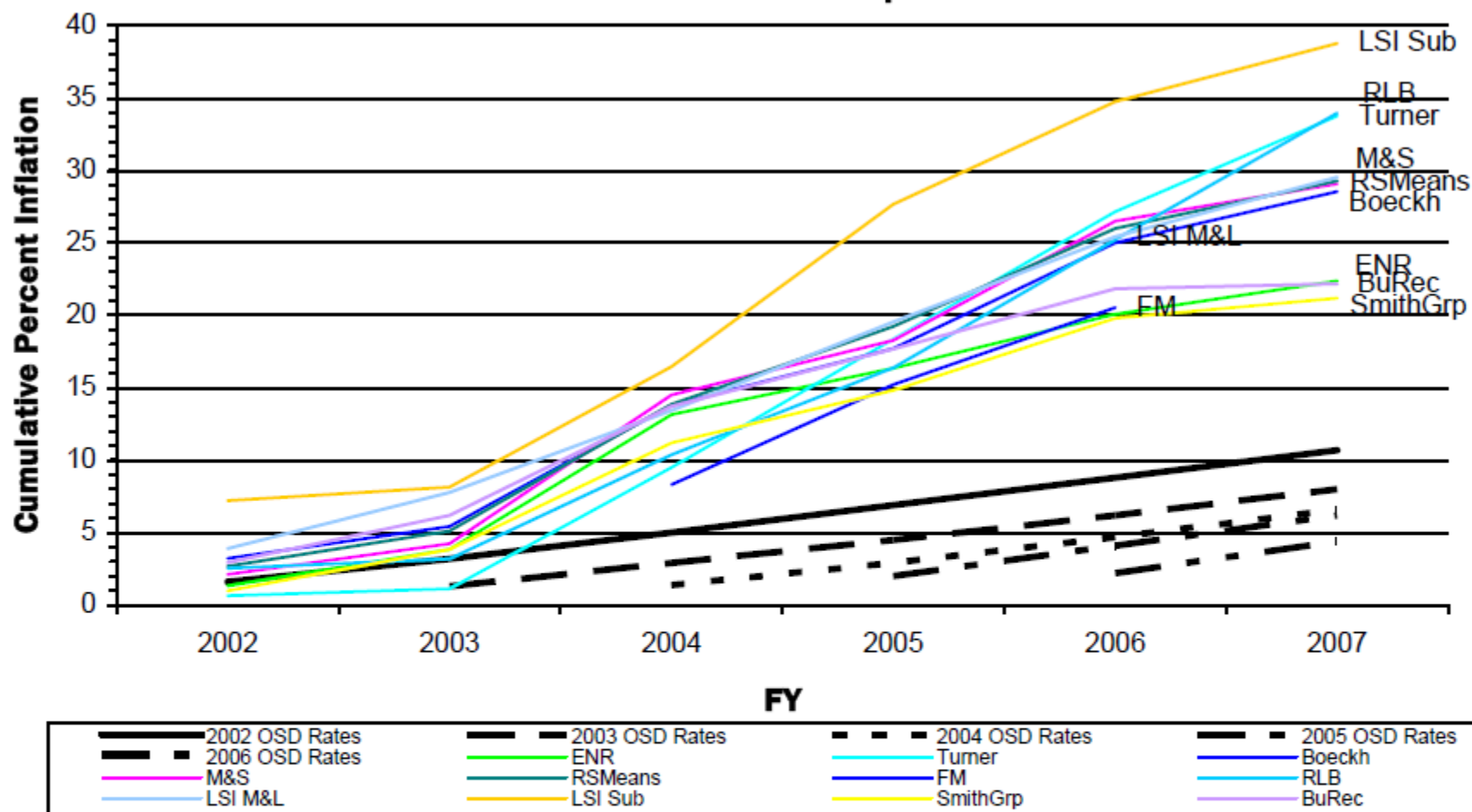
Deputy Under Secretary of Defense  
(Installations and Environment)

Office of the Under Secretary of Defense  
(Acquisition, Technology, and Logistics)

June 2008

Underestimation of construction industry escalation during the last several years has understated the overall cost of military construction (MILCON) and effectively reduced the scope of the MILCON program. The shortfall between the predicted escalation rates used in development of MILCON budget estimates and the actual inflation rates reported by the industry's most popular cost indexes averaged over five percentage points per year during the last five years. When compared over a typical three-year window between the time the budget estimate is prepared and the anticipated midpoint of construction, the cumulative inflation shortfall averages nearly fourteen percentage points from the actual inflation rates reported by industry. This generated problems to adequately fund projects.

## Cumulative Inflation Comparison

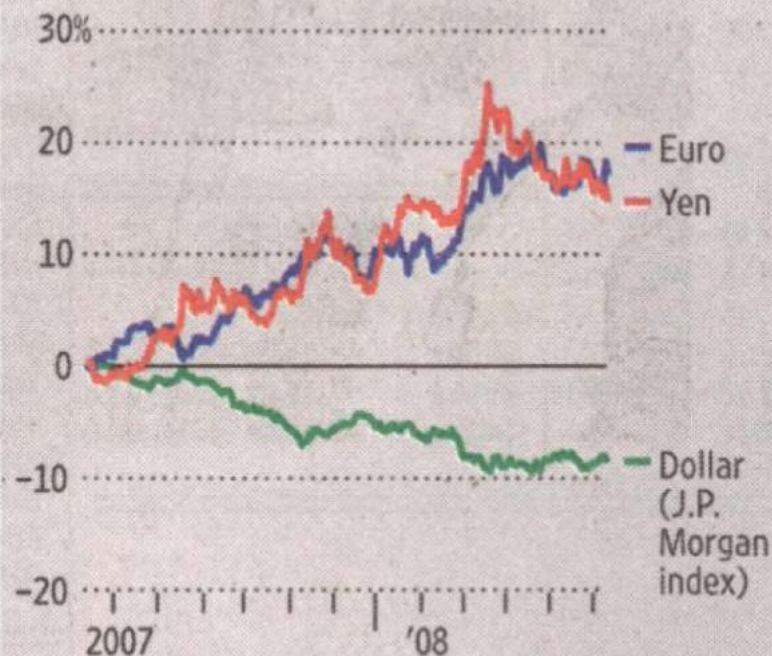


**Figure F-2. Comparison of Cumulative OSD Assumed Inflation Rates to Historical Indices**

For the total period between 2002 and 2007, OSD rates predicted a cumulative total increase of 11%, compared with a 28.87% average for the historical indices.

# WSJ 6-10-08

The yen and the euro against the dollar, and the dollar versus the currencies of the major trading partners of the U.S. (J.P. Morgan trade-weighted index)



	\$ per	52-wk chng	Per \$
<b>Yen</b>	\$0.009407	Up 14.5%	¥106.3038
<b>Euro</b>	\$1.5628	Up 17.0%	€0.6399
<b>Dollar index</b>	79.7	Down 8.3%	

Sources: Thomson Reuters; J.P. Morgan via WSJ Market Data Group

# WSJ 11-18-08

The yen and the euro against the dollar, and the dollar versus the currencies of major U.S. trading partners (J.P. Morgan trade-weighted index)

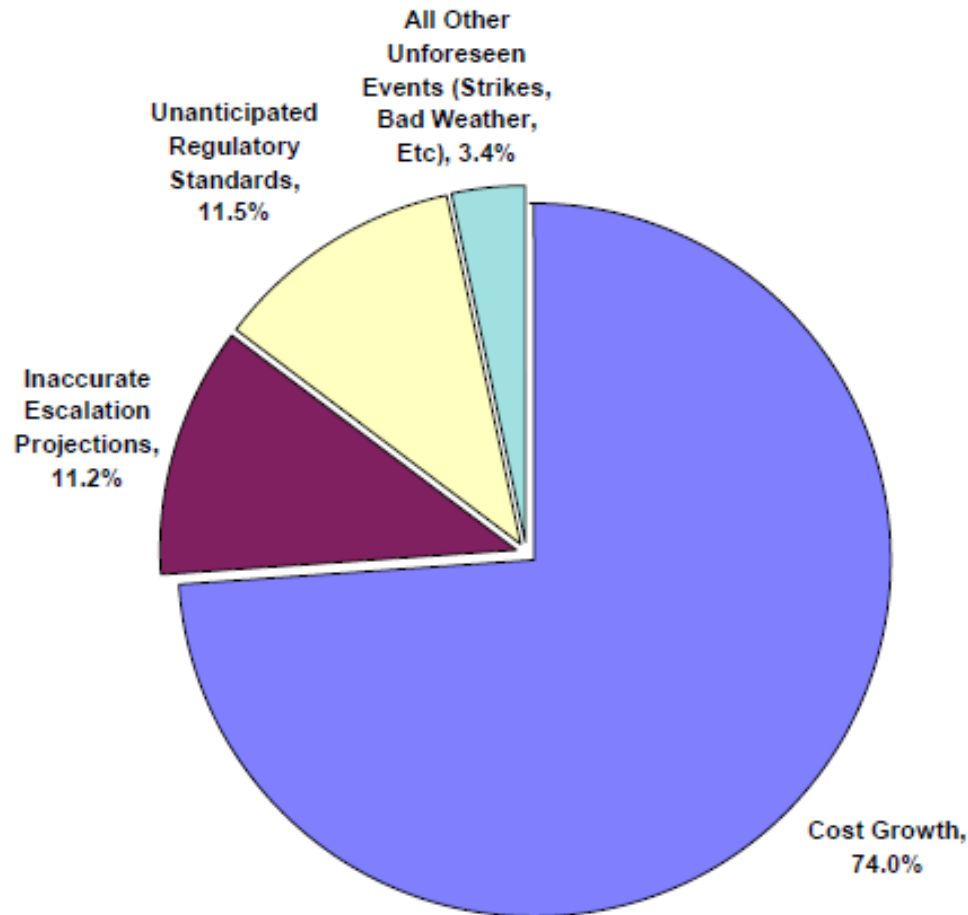


	\$ per	52-wk chng	Per \$
<b>Yen</b>	\$0.010371	Up 13.9%	¥96.42
<b>Euro</b>	\$1.265	Down 13.7%	€0.7905
<b>Dollar index</b>	91.2	Up 11.5%	

Source: Thomson Reuters via WSJ Market Data Group

# 1981 RAND Study

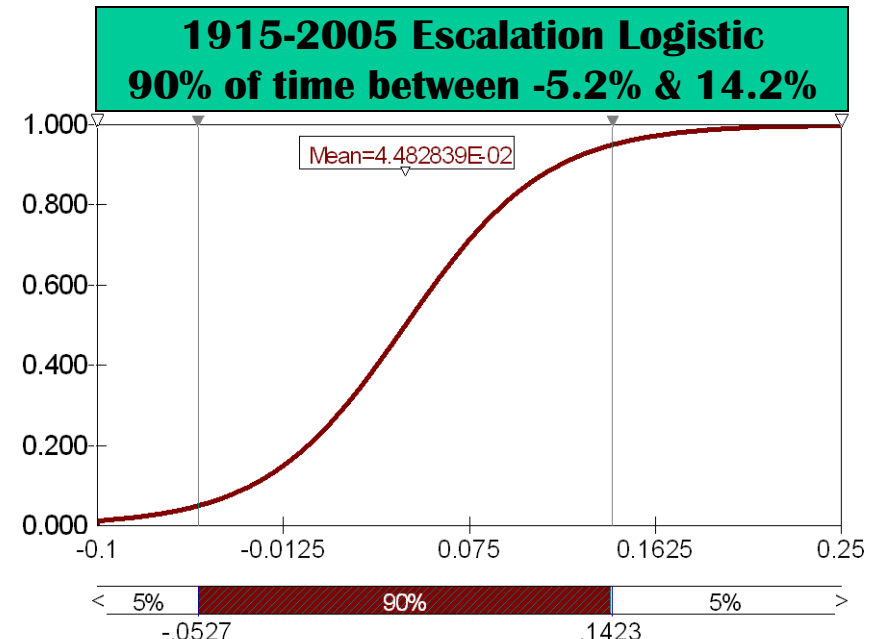
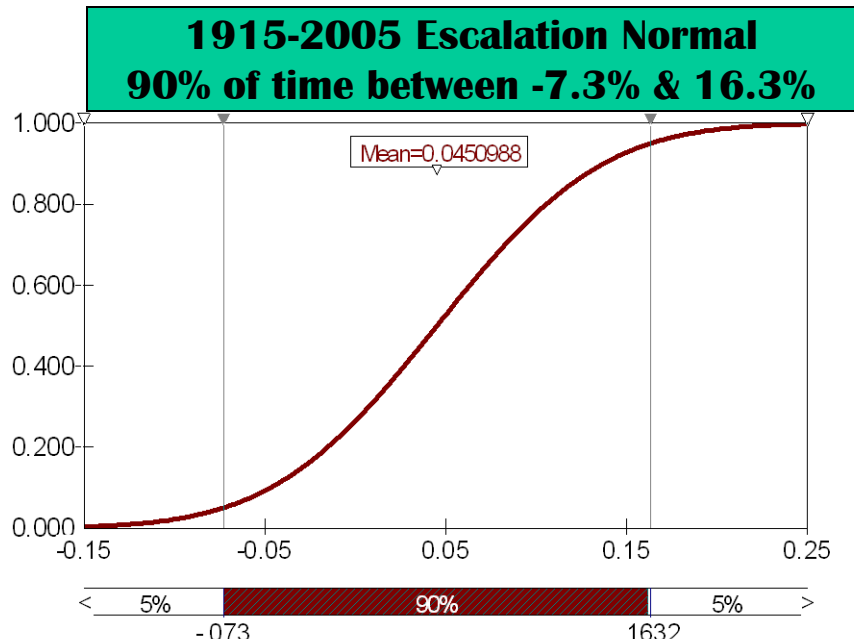
## 40 Large Process Plants





# Contrary to Popular Opinion

- Recent Inflation **not that unusual**
  - ENR CCI annual average increase past 103 years
    - Over 3% - 60%
    - Over 4% - 51%
    - Over 5% - 35%
    - Over 6% - 31%
    - Over 7% - 23%
    - Over 8% - 16%
    - Over 9% - 13%
    - Over 10% - 10%**



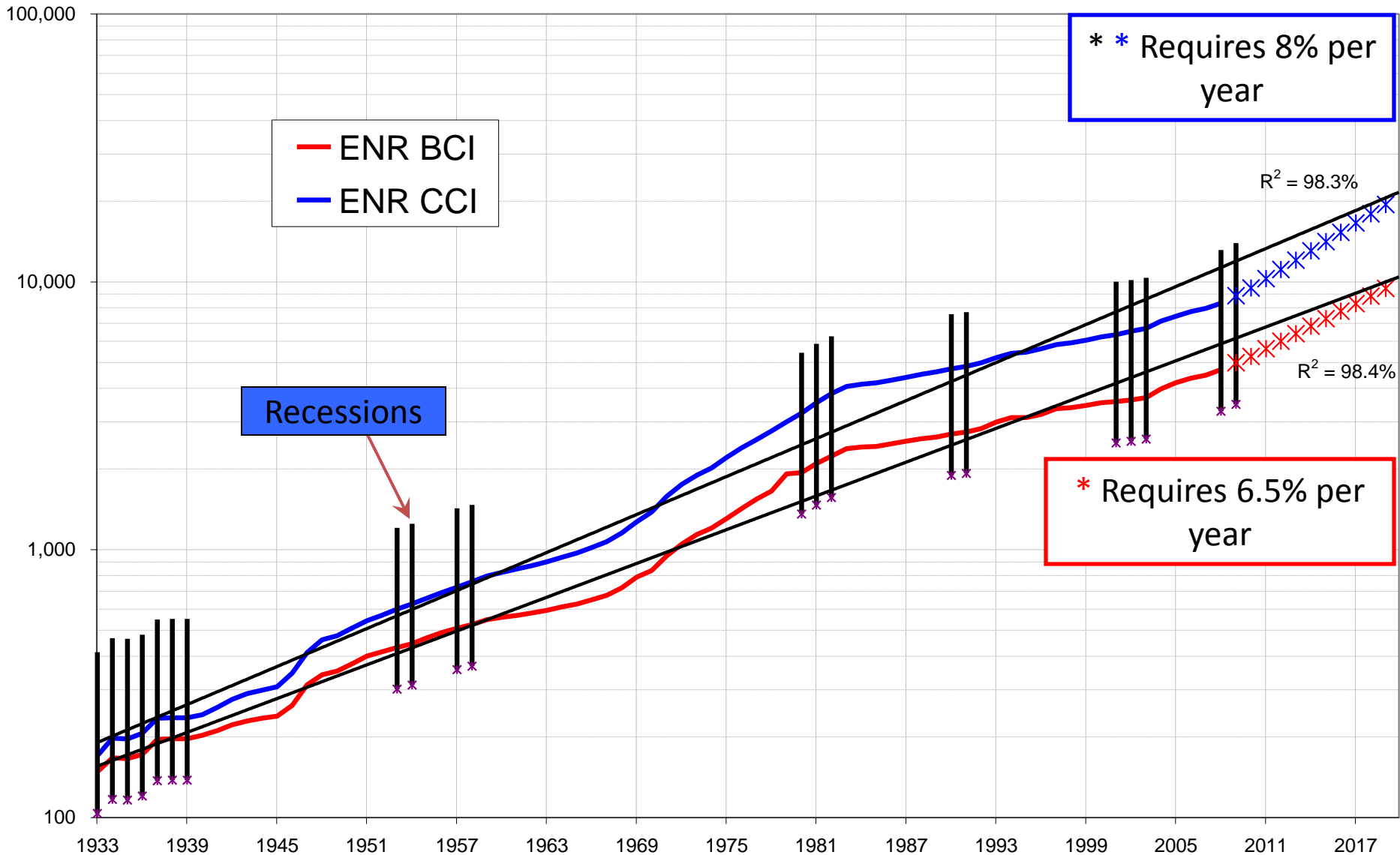


# Zimbabwe Inflation – WSJ 7-2-08

- Robert Mugabe has kept his embattled regime in Zimbabwe afloat on a sea of paper money.
  - Annual inflation rate estimated over 1 million percent
  - Loaf of bread costs 30 billion Zimbabwean dollars.
  - Can of Coke sells for 15 billion Zimbabwean dollars.
  - Banks limit withdrawals to 25 billion Zimbabwe dollars a day.



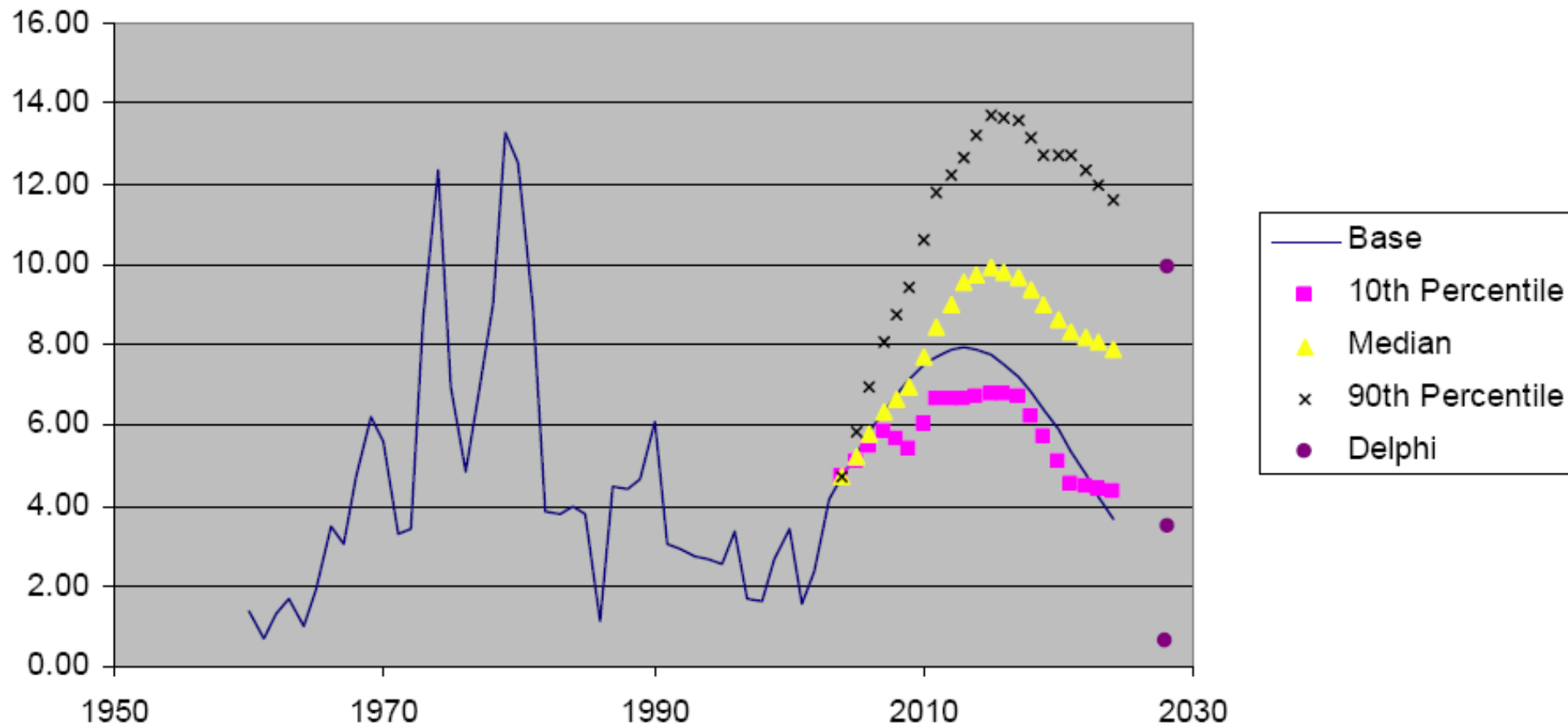
# ENR Indexes - Logarithmic Scale



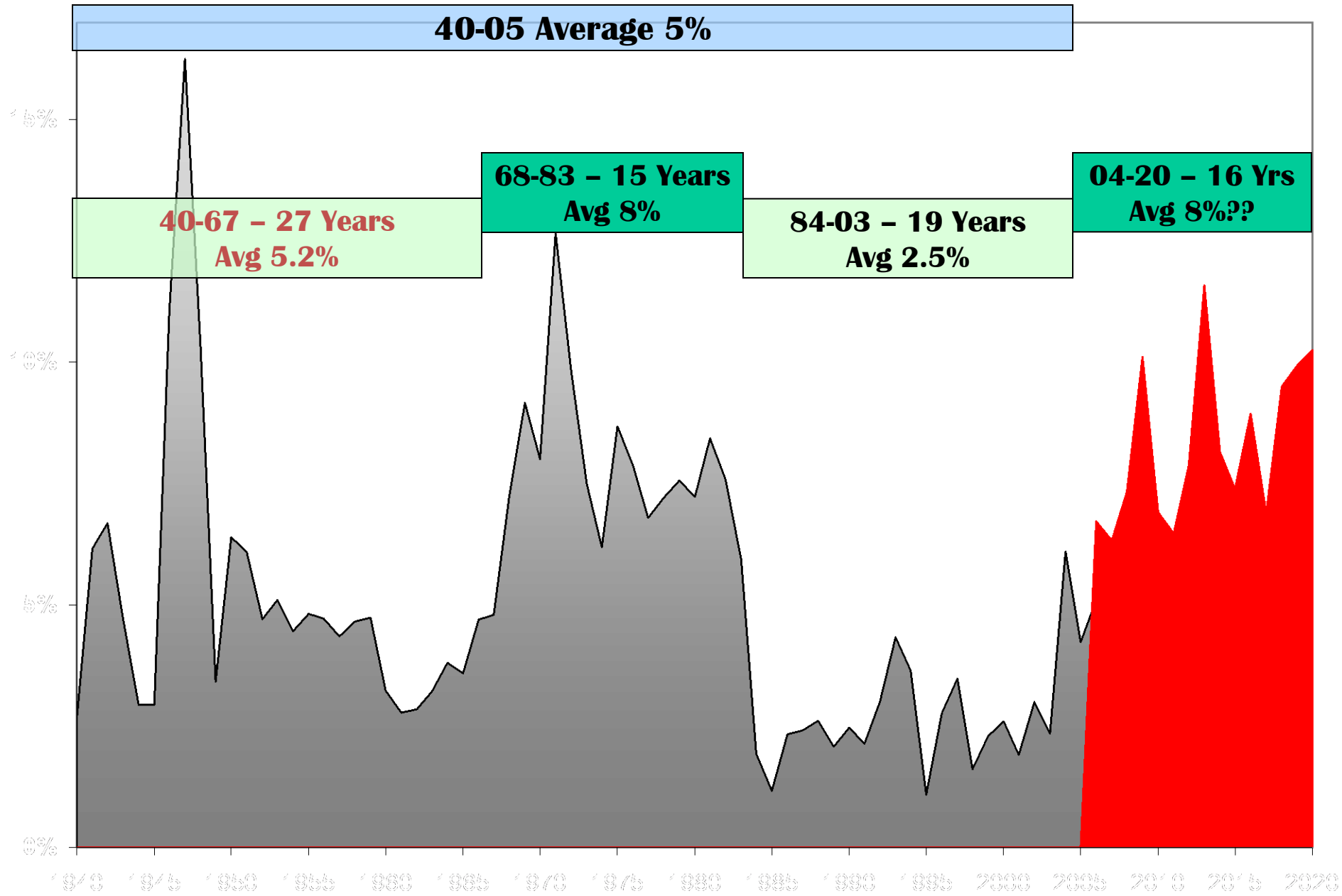
Regression to the Mean Theory

# Society of Actuaries – 2005 Delphi Study

## CPI Annual Change (%)



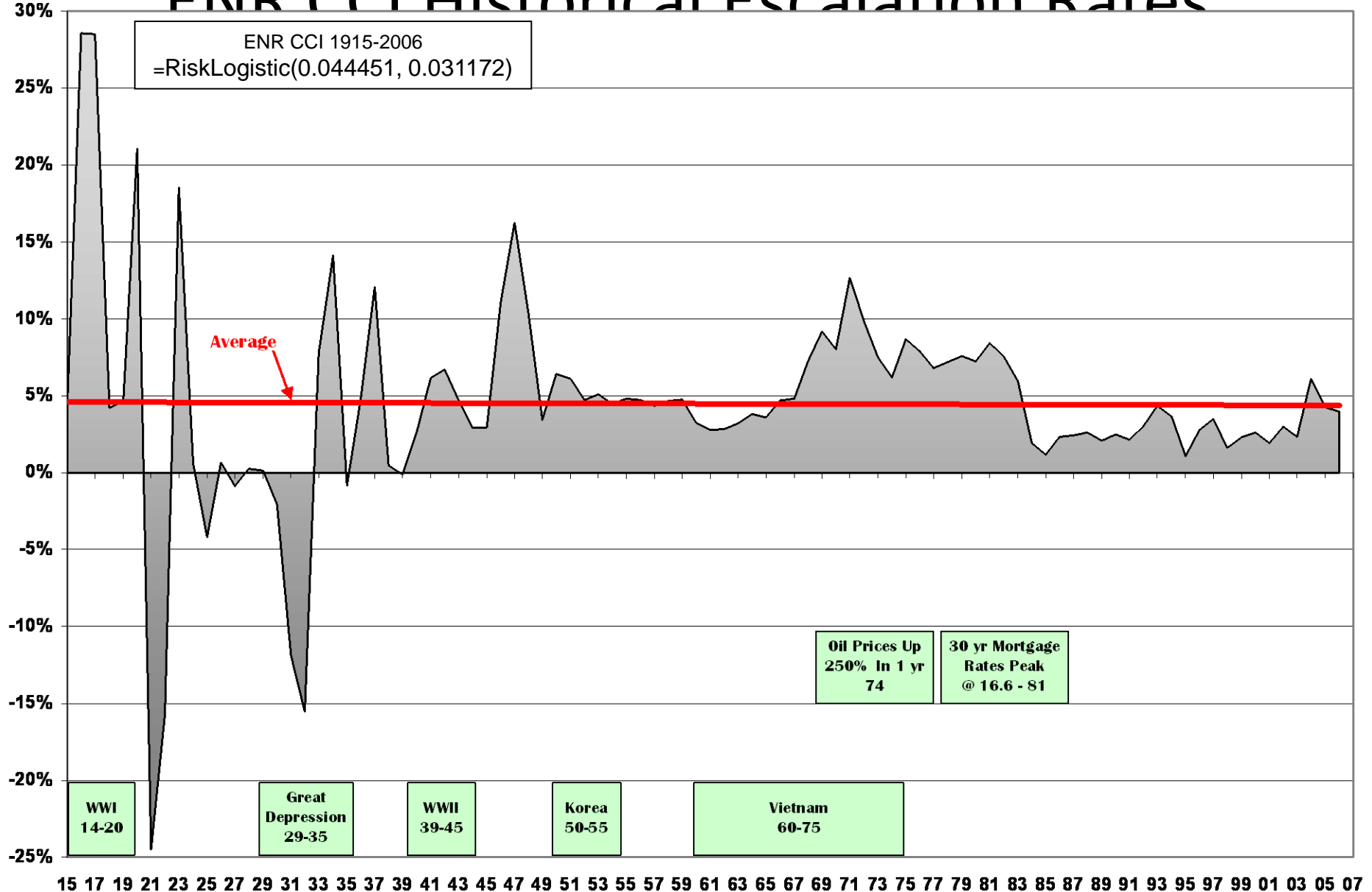
# ENR CCI 65 Years of History



# ENR CCI Historical Escalation Rates

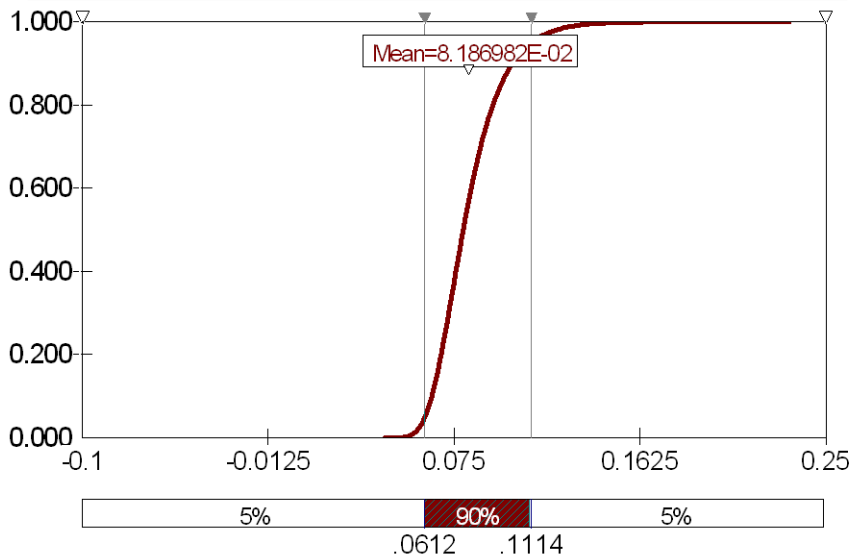
ENR CCI 1915-2006  
=RiskLogistic(0.044451, 0.031172)

Average

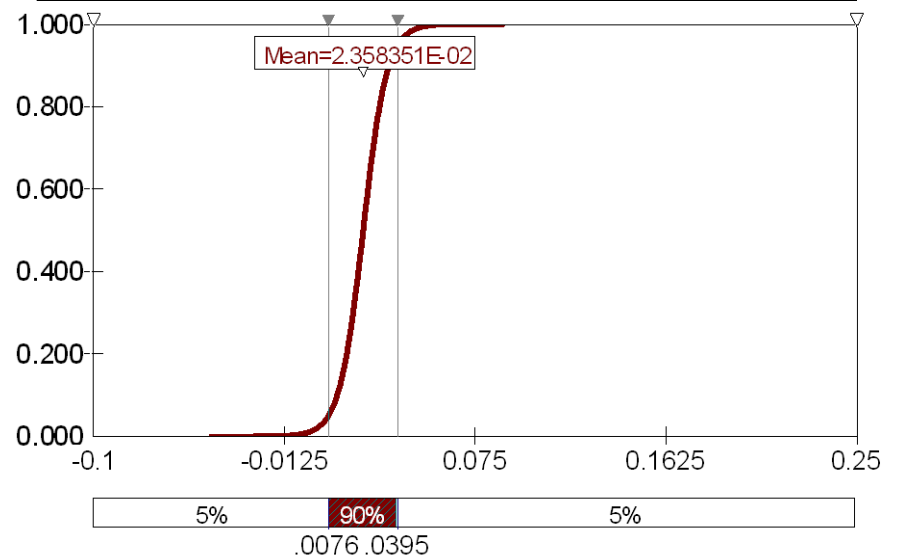


# Distinct Cyclical Periods

**1968-1982 Escalation**  
**90% of time between 6.1% & 11.4%**

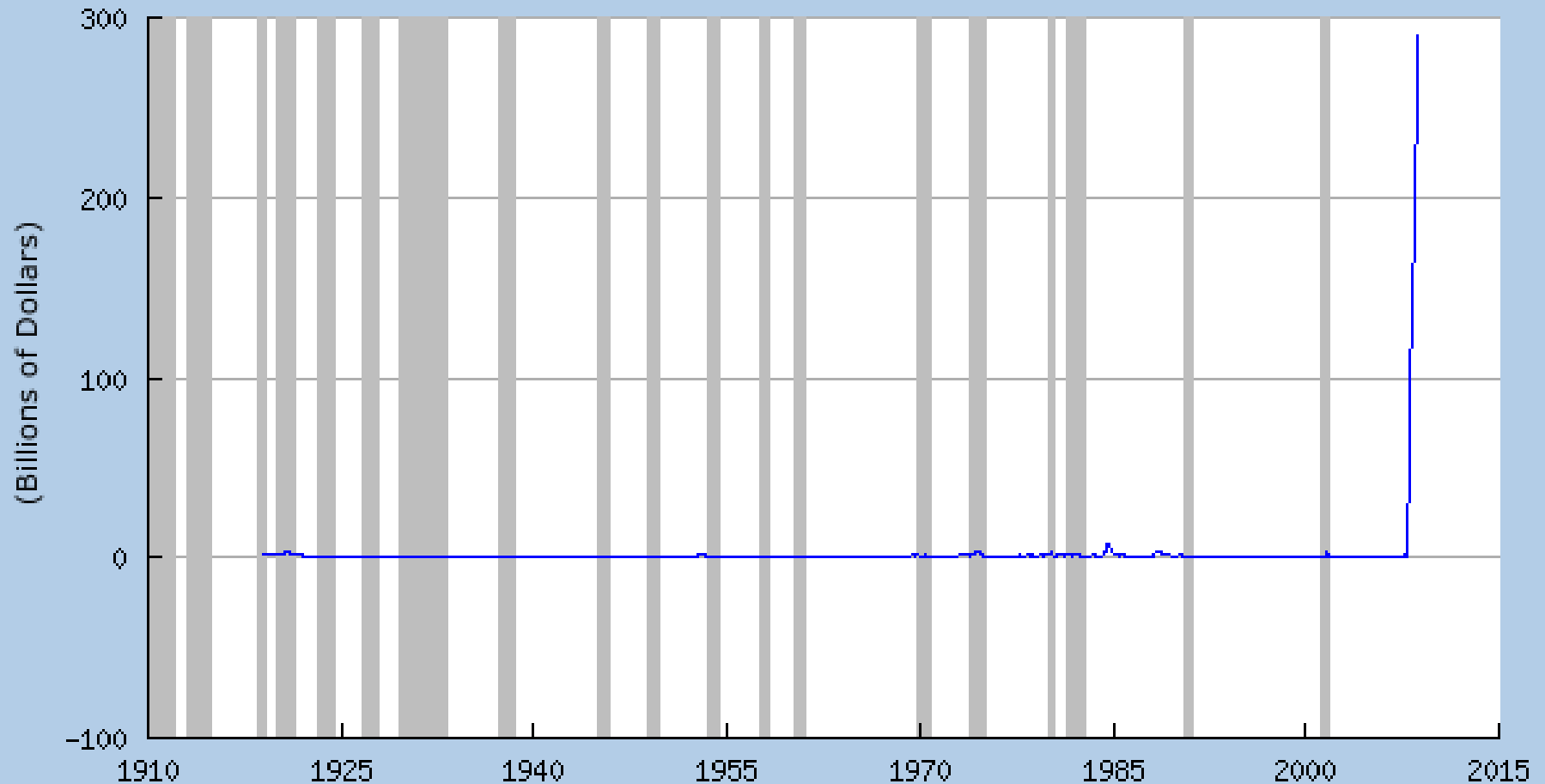


**1983-2003 Escalation**  
**90% of time between 0.8% & 4%**



# Fed Borrowing Historical Rates

Total Borrowings of Depository Institutions from the Federal Reserve (BORROW)  
Source: Board of Governors of the Federal Reserve System



Shaded areas indicate US recessions as determined by the NBER.  
2008 Federal Reserve Bank of St. Louis: [research.stlouisfed.org](http://research.stlouisfed.org)